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**IN THE CLAIMS**

1 1-3. (canceled)

1 4. (currently amended) A data transmission system comprising:

2 a first plurality of Gigabit Ethernet input/output ports, each port being adapted to  
3 be coupled to a first Gigabit Ethernet link carrying data packets;

4 a multiplexer interface coupled to said first input/output ports, said multiplexer  
5 interface being adapted to receive said data packets;

6 a multiplexer coupled to said multiplexer interface, said multiplexer being  
7 adapted to receive said data packets from said multiplexer interface and to multiplex  
8 said data packets;

9 a transmitter coupled to said multiplexer; and

10 an optical link coupled to said transmitter, said transmitter being adapted to  
11 transmit the multiplexed data packets over said optical link to a receiver;

12 wherein said multiplexer interface comprises a first optical transceiver adapted to detect  
13 a first loss of signal in at least one of said first Gigabit Ethernet links; to generate a  
14 signal loss code insert in response to detection of said first loss of signal; and to apply  
15 said signal loss code insert to said multiplexer in place of said data packets from said  
16 at least one of said first Gigabit Ethernet links having said first loss of signal;

17 said receiver, which is coupled to said optical link and is adapted to receive said  
18 multiplexed data packets from said optical link;

19 a demultiplexer coupled to said receiver, said demultiplexer being adapted to  
20 demultiplex the received multiplexed data packets; and

21 a demultiplexer interface coupled to said demultiplexer, said demultiplexer  
22 interface being adapted to receive the demultiplexed data packets,

23 wherein said demultiplexer interface comprises a plurality of second optical  
24 transceivers that are each adapted to be coupled to a plurality of second Gigabit  
25 Ethernet links;

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26 and wherein said demultiplexer interface is adapted to prevent at least one of said  
27 second optical transceivers from transmitting light in response to receipt of said signal  
28 loss code insert within the demultiplexed data packets;

29 ~~The system of claim 2, wherein each of said second optical transceivers comprises a~~  
30 ~~physical layer chip,~~  
31 ~~adapted to detect a third loss of signal in one of said second~~  
32 ~~Gigabit Ethernet links and go into an auto-negotiation stage.~~

1 5 - 9. (canceled)

1 10. (Previously presented) A method of communicating the existence of  
2 faults in a data transmission system, said method comprising:  
3 receiving a plurality of data packets carried on a plurality of first Gigabit Ethernet  
4 links at a first plurality of Gigabit Ethernet input/output ports;  
5 multiplexing said data packets;  
6 transmitting the multiplexed data packets to a receiver along at least a portion of  
7 an optical link;  
8 detecting a first loss of signal in at least one of said first Gigabit Ethernet links  
9 and generating a signal loss code insert in response to detecting said first loss of signal;  
10 and

11 transmitting said signal loss code insert to said receiver in place of said data packets  
12 from said at least one of said first Gigabit Ethernet links having said first loss of signal;

13 ~~The method of claim 7, wherein each of said second optical transceivers comprises a~~  
14 ~~physical layer chip,~~  
15 ~~said method further comprising said physical layer chip~~  
16 ~~detecting a third loss of signal in one of said second~~  
17 ~~Gigabit Ethernet links; and~~  
18 ~~entering into an auto-negotiation stage.~~

1 11-26. (canceled)